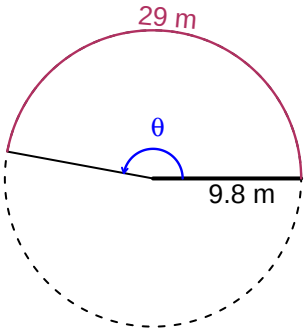
Name: Date:

Trig Final (TEST v629)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

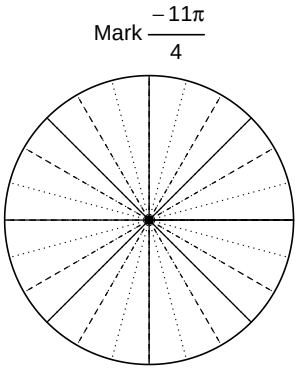
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 9.8 meters. The arc length is 29 meters. What is the angle measure in radians?

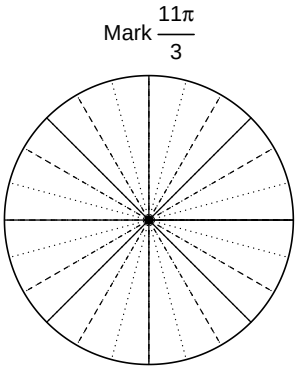


Question 2

Consider angles $\frac{-11\pi}{4}$ and $\frac{11\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-11\pi}{4}\right)$ and $\sin\left(\frac{11\pi}{3}\right)$ by using a unit circle (provided separately).



Find $\cos(-11\pi/4)$



Find $\sin(11\pi/3)$

Question 3

If $\tan(\theta) = \frac{-72}{65}$, and θ is in quadrant IV, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with a frequency of 6.25 Hz, an amplitude of 4.74 meters, and a midline at $y = 3.19$ meters. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).